



Schedule Risk Assessment (SRA) Overview

July 2013

NAVY CEVM





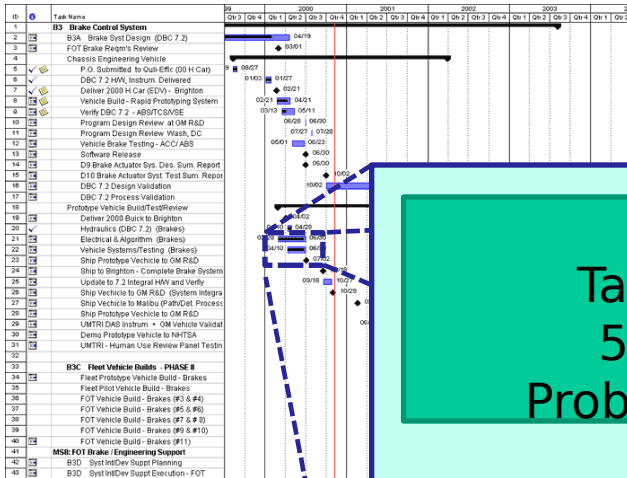
Outline

- Why is an SRA required?
- How does it work?
- Who performs the SRA?
- Setting the Target and Probability
- Reviewing the Results and Identifying Tradeoffs
- Documenting the Results





Why the SRA Requirement?



Task 1
50%
Probability

Task 2
50%
Probability

Task 3
25%
Probability

With hundreds if not thousands of similar relationships in a schedule, SRA helps evaluate the probability of completing the effort by a given deadline





How Does it Work?

- Monte Carlo Simulation is run to determine the probability of completion for a desired SRA target milestone(s) by a desired date(s):
 - Completed for a specified number of iterations
 - Increased number of iterations increases prediction accuracy
 - Based upon a random sampling of outcomes bounded by user provided best case, worst case, and most likely outcomes for each task in the IMS
 - Individual estimate ranges are required for each critical, near critical, and high risk task. These estimates should be developed by the responsible Control Account Manager (CAM) or technical lead
 - Remainder of tasks may be assessed in groups or globally
- Results of the simulation may either be used to prompt changes in the schedule or to revise expectations and/or contract terms.





Who performs the SRA?

- The government sets the target milestone for the assessment (typically a program event)
- The contractor PM sets the desired probability (often with input from the government) and oversees the effort
- Contractor CAMs and technical leads are responsible for developing the best case, worst case, and most likely duration estimates
- Contractor scheduler is responsible for coordinating the effort and performing the Monte Carlo simulation.
- All parties participate in:
 - Reviewing the results and correcting errors
 - Identifying tradeoffs





Setting the Target for the SRA

- The government is responsible for setting the SRA target date. The target date selected depends on the objective
- Typically it is recommended that both the end milestone and the current baseline be selected as SRA targets
 - This allows for overall optimization
- Examples
 - IBRs – End of contract and first milestone
 - Rolling Wave – End of contract and detailed period end milestone
 - OTB – End of contract





Setting the Probability

- What does the Government deem an acceptable level of risk that delivery may be late? Is the project technical, schedule, or cost driven? Typically strict schedule or cost objectives drive the probability higher.
- General Guidance
 - > 90% is not cost effective
 - < 50% is very risky
 - For most contracts, a probability of 50-80% strikes a reasonable balance between risk vs cost

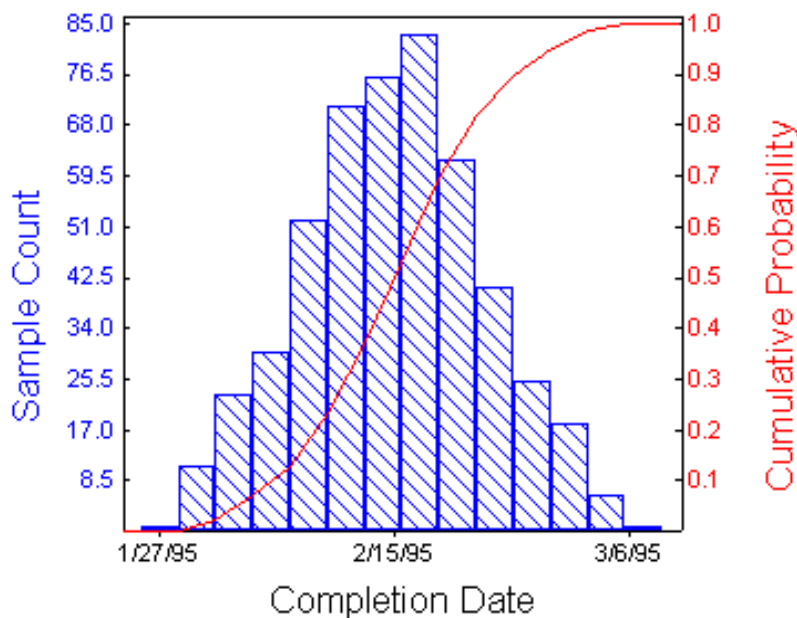




Review the Results - Histogram

Date: 2/5/01 12:26:56 PM
Number of Samples: 500
Unique ID: 1
Name: Widget

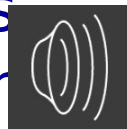
Completion Std Deviation: 4.9d
95% Confidence Interval: 0.4d
Each bar represents 2d.



Completion Probability Table

Prob	Date	Prob	Date
0.05	2/3/95	0.55	2/16/95
0.10	2/7/95	0.60	2/16/95
0.15	2/8/95	0.65	2/17/95
0.20	2/9/95	0.70	2/20/95
0.25	2/10/95	0.75	2/20/95
0.30	2/10/95	0.80	2/21/95
0.35	2/13/95	0.85	2/22/95
0.40	2/14/95	0.90	2/23/95
0.45	2/15/95	0.95	2/27/95
0.50	2/15/95	1.00	3/6/95

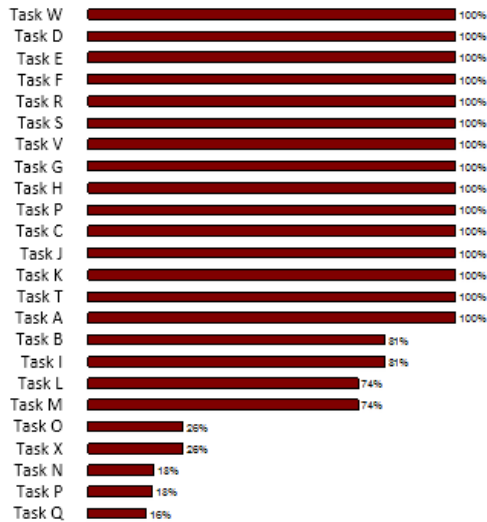
- This histogram plots the number of iterations which predict completion by any given date, as well as the associated probability of completion by that date



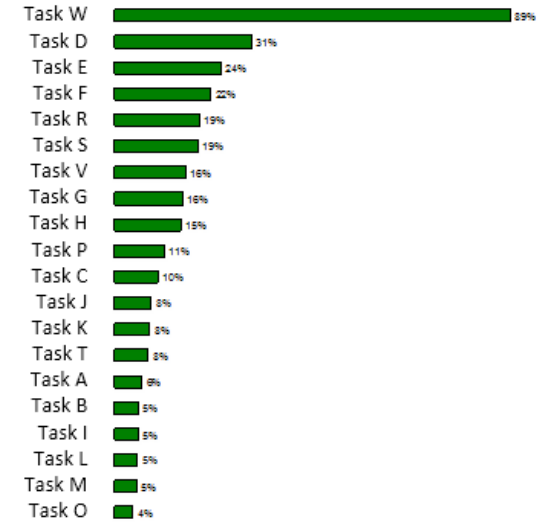


Review the Results - Tornado Charts

Criticality Index: All tasks



Schedule Sensitivity Index: Entire Plan - All tasks



- Tornado Charts identify (by decreasing significance), the tasks whose duration estimates and logic are most likely to impact the target milestone completion date
- The two examples above demonstrate different but related metrics plotted for this purpose





Identifying Tradeoffs

- SRA analysis is an iterative process. After each simulation, the program team must identify the problem or risk areas, evaluate cost/schedule/technical tradeoffs of alternate solutions, implement the fix, and re-run the simulation until it can produce a schedule that achieves an acceptable level of probability by an acceptable completion date.
- Options include:
 - Addition of resources to enable earlier task completion
 - Task logic and sequencing may be reconsidered
 - Risk mitigation activities may be funded in order to reduce task durations
 - Revised expectations or contractual milestone dates





Documenting Results

- Document final probability of the target completion date
- Ensure the risk list is updated for any newly identified risk items and associated mitigations and ensure that the mitigation activities are properly labeled and tracked in the IMS
- Document any additional requested schedule refinement or adjustments to be addressed post-SRA
- If the SRA is conducted during initial baselining, rebaselining, or rolling wave activity, take the opportunity to baseline the results if possible





Point of Contact

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